

MEMORANDUM (LABORATORY DATA REPORT)

Shaw Environmental & Infrastructure, Inc.

Contract No. EP-C-08-034

In reply refer to: 11-JSC-10

To: D. Miller
C. Paul

From: John S. Cox
Lab: GC

Thru: S. Kumar
J. Cox

Date: 12-May-2011

Technical Directive: 70A724SF
Task No.: 23993

Originator: Rick Wilkin
Copies: S. Vandegrift
J. Cox

Project/Sample Site: Pavillion Groundwater

Date Collected: 4/14,18-20/2011

Date Received: 21-Apr-2011

Date Analyzed: 21-22-April-2011

No. Samples Analyzed: 14

Shaw Sample Set No.: 6030

Sample Matrix: Water

Analysis Type: GC direct inject

Sample Preparation: N/A

Method(s) Used : Modified RSKSOP-201 Rev. 2 - GC Analysis of Alcohol Compounds in Water
Samples

Comments:

Not all QC results met criteria established in RSKSOP-201/2. Surrogate recovery was below the DQO for samples 6030-06,-06DUP, -07, -10 and -13 which are all samples from EPAMW-01 and -02. The low recoveries of each sample listed is due to a high alkalinity matrix effect. The final CCC failed to meet the DQO for propylene, ethylene and tetraethylene glycols. This occurred during automated analysis and reanalysis was not possible until several days after initial analysis. However, repeated CCC's met the DQO so no further analyses were required according to RSKSOP-201/2. The final blank contained diethylene glycol above the MDL due to possible carryover from preceeding CCC, the blank prior to CCC was ND for this analyte. A laboratory control spike was ran in place of a matrix spike.

Shaw Environmental & Infrastructure Inc.
Analytical Service Results Report

Page 1 of 1

Laboratory:

GC

Report Date:

12-May-2011

Technical Directive:

70A7248F

Analysts:

J. Cox

Method:

Modified RSKSOP-201 Rev.2

Analysts:	J. Cox	Analyses		2-Butoxyethanol		Propylene Glycol		Ethylene Glycol		2,2,2-Trichloroethanol (surrogate)			Diethylene Glycol		Triethylene Glycol		Tetraethylene Glycol		
		Codes		111-75-2		57-55-6		107-21-1		115-20-8			111-46-6		112-27-6		112-60-7		
		Unit		mg/L		mg/L		mg/L		mg/L			mg/L		mg/L		mg/L		
		MDL		0.61		1.41		2.26		-			1.73		2.80		10.0		
		QL		10.0		10.0		10.0		-			10.0		10.0		20.0		
Method:	Modified RSKOP-201 Rev.2																		
Field Sample ID	Lab Sample ID	Date Collected	Date Analyzed	Data	DF	Data	DF	Data	DF	Data	True Value	% REC	Data	DF	Data	DF	Data	DF	
PGDW/20-0411	6030-01	4/18/2011	4/21/2011	ND	1	ND	1	ND	1	107	100	107%	ND	1	ND	1	ND	1	
PGDW/20-0411	6030-01 DUP	4/18/2011	4/22/2011	ND	1	ND	1	ND	1	104	100	104%	ND	1	ND	1	ND	1	
PGDW/26-0411	6030-02	4/18/2011	4/22/2011	ND	1	ND	1	ND	1	101	100	101%	ND	1	ND	1	ND	1	
PGDW/30-0411	6030-03	4/18/2011	4/22/2011	ND	1	ND	1	ND	1	107	100	107%	ND	1	ND	1	ND	1	
PGDW/32-0411	6030-04	4/18/2011	4/22/2011	ND	1	ND	1	ND	1	103	100	103%	ND	1	ND	1	ND	1	
PGDW/32d-0411	6030-05	4/19/2011	4/22/2011	ND	1	ND	1	ND	1	104	100	104%	ND	1	ND	1	ND	1	
EPAMW/02-0411	6030-06	4/19/2011	4/22/2011	ND	1	ND	1	ND	1	84.5	100	84.5%	BQL (2.22)	1	ND	1	ND	1	
EPAMW/02-0411	6030-06 DUP	4/19/2011	4/22/2011	ND	1	ND	1	ND	1	63.6	100	63.6%	BQL (2.90)	1	ND	1	ND	1	
EPAMW/02d-0411	6030-07	4/19/2011	4/22/2011	ND	1	ND	1	ND	1	66.6	100	66.6%	BQL (2.90)	1	ND	1	ND	1	
Trip Blank	6030-09	4/14/2011	4/22/2011	ND	1	ND	1	ND	1	108	100	108%	BQL (1.91)	1	ND	1	ND	1	
EPAMW/02-0411	6030-10	4/19/2011	4/22/2011	ND	1	ND	1	ND	1	80.9	100	80.9%	BQL (2.62)	1	BQL (2.99)	1	ND	1	
PGDW/05-0411	6030-11	4/19/2011	4/22/2011	ND	1	ND	1	ND	1	112	100	112%	ND	1	ND	1	ND	1	
PGDW/45-0411	6030-12	4/19/2011	4/22/2011	ND	1	ND	1	ND	1	109	100	109%	ND	1	ND	1	ND	1	
EPAMW/01-0411	6030-13	4/20/2011	4/22/2011	ND	1	ND	1	ND	1	68.2	100	68.2%	BQL (1.91)	1	ND	1	ND	1	
PGDW/41-0411	6030-14	4/20/2011	4/22/2011	ND	1	ND	1	ND	1	104	100	104%	ND	1	ND	1	ND	1	
FIELD BLANK	6030-15	4/18/2011	4/22/2011	ND	1	ND	1	ND	1	109	100	109%	ND	1	ND	1	ND	1	

Comments:

Not all GC results met criteria established in RSKSOP-201/2. Surrogate recovery was below the DQO for samples 6030-06-06DUP, -07, -10 and -13 which are all samples from EPAMW-01 and -02. The low recoveries of each sample listed is due to a matrix effect. The final CCC failed to meet the DQO for propylene, ethylene and tetraethylene glycols. This occurred during automated analysis and reanalysis was not possible until several days after initial analysis. However, repeated CCC's met the DQO so no further analyses was required according to RSKSOP-201/2. The QL's and MDL's were completed April 20, 2011.

Notes:

1. If the parameter was detected above the quantitation limit (QL), the numeric result is reported. BQL denotes that the parameter was not detected at or above the quantitation limit. BQL () denotes that the parameter was detected above the method detection limit (MDL), but below QL and the estimated numeric result is reported in parentheses. ND denotes that the parameter was not detected at all. All the results are corrected with dilution factors (DF), if applicable.

2. "N/A" denotes that the information is not available or the analyte is not analyzed.

Shaw Environmental & Infrastructure Inc.
Analytical Service Results Report

Laboratory: **GC** Report Date: **12-May-2011**

Quality Control Data Summary

Technical Directive: **70A724SF**

Analysts: **J. Cox**

Method: **Modified RSKSOP-201 Rev.2**

Analysts:	<div>J. Cox</div>		Analytes		2-Butoxyethanol			Propylene Glycol			Ethylene Glycol			222-Trichloroethanol (surrogate)			Diethylene Glycol			Triethylene Glycol			Tetraethylene Glycol								
			Codes		111-76-2			57-55-6			107-21-1			115-20-8			111-46-6			112-27-6			112-60-7								
			Unit		mg/L			mg/L			mg/L			mg/L			mg/L			mg/L			mg/L								
			MDL		0.61			1.41			2.26			-			1.73			2.80			10.0								
			QL		10.0			10.0			10.0			-			10.0			10.0			10.0								
Method:	<div>Modified RSKSOP-201 Rev.2</div>		QC Sample ID		Additional ID		Date Prepared		Date Analyzed		Data	True Value	% REC	Data	True Value	% REC	Data	True Value	% REC	Data	True Value	% REC	Data	True Value	% REC						
			Water+Surrogate Blank		-		4/21/2011		4/21/2011		ND	-	-	ND	-	-	ND	-	-	103	100	103%	ND	-	-	ND	-	-			
			CCC		100 mg/L		4/21/2011		4/21/2011		99.8	100	99.8%	99.8	100	99.8%	97.3	100	97.3%	102	100	102%	100	100	100%	100	100	100%	104	100	104%
			SS		250 µg/L		4/21/2011		4/21/2011		260	250	104%	259	250	104%	254	250	102%	113	100	113%	256	250	102%	258	250	103%	263	263	100%
			LCS		100 mg/L		4/21/2011		4/21/2011		99.3	100	99.3%	96.1	100	96.1%	96.5	100	96.5%	102	100	102%	98.3	100	98.3%	98.6	100	98.6%	92.8	100	92.8%
Water+Surrogate Blank		-		4/21/2011		4/21/2011		ND	-	-	ND	-	-	ND	-	-	103	100	103%	ND	-	-	ND	-	-	ND	-	-			
Water+Methanol Blank		-		4/21/2011		4/21/2011		ND	-	-	ND	-	-	ND	-	-	NA	-	NA	ND	-	-	ND	-	-	ND	-	-			
CCC		100 µg/L		4/21/2011		4/22/2011		97.1	100	97.1%	88.2	100	88.2%	98.0	100	98.0%	101	100	101%	97.0	100	97.0%	97.6	100	97.6%	95.0	100	95.0%			
Water+Methanol Blank		-		4/21/2011		4/22/2011		ND	-	-	ND	-	-	ND	-	-	NA	-	NA	ND	-	-	ND	-	-	ND	-	-			
CCC		100 µg/L		4/21/2011		4/22/2011		96.4	100	96.4%	90.9	100	90.9%	103	100	103%	97.2	100	97.2%	97.1	100	97.1%	96.0	100	96.0%	94.8	100	94.8%			
Water+Methanol Blank		-		4/21/2011		4/22/2011		ND	-	-	ND	-	-	ND	-	-	NA	-	NA	ND	-	-	ND	-	-	ND	-	-			
CCC		100 µg/L		4/21/2011		4/22/2011		97.3	100	97.3%	70.2	100	70.2%	72.9	100	72.9%	98.7	100	98.7%	92.8	100	92.8%	90.5	100	90.5%	78.4	100	78.4%			
Water+Methanol Blank		-		4/21/2011		4/22/2011		ND	-	-	ND	-	-	ND	-	-	NA	-	NA	BQL (1.92)*	-	-	ND	-	-	ND	-	-			

Comments:

Not all QC results met criteria established in RSKSOP-122/4. The final CCC failed to meet the DQO for propylene, ethylene and tetraethylene glycols. This occurred during automated analysis and reanalysis was not possible until several days after initial analysis. However, repeated CCC's met the DQO so no further analyses were required according to RSKSOP-201/2. The QL's and MDL's were completed April 20, 2011. *above MDL due to possible carryover from preceeding CCC, the blank prior to CCC was ND for this analyte. A laboratory control spike was ran in place of a matrix spike.

Notes:

1. **MB** - Method Blank. **CCC** - Continuing Calibration Check. A calibration standard analyzed within the batch of samples. **LCS** - Laboratory Control Spike. A laboratory blank spiked with analytes at known concentrations. **MS** - Matrix Spike. A field sample spiked with known concentrations of analytes. The field sample id is identified. **SS** - Samples obtained from the second sources are identified by their designated names. **DUP** - Field sample duplicate analysis. A sample selected by the lab analyst to analyze as a duplicate. It is reported in the sample result section. **% REC** - Percent Recovery. Calculated as the percentage of the results to the true values. It equals to % accuracy for CCC.